

**A PORTABLE LII BASED INSTRUMENT AND METHOD FOR  
PARTICULATE CHARACTERIZATION IN COMBUSTION EXHAUST**

**Abstract of the Disclosure**

5           An improved instrument and method are provided for particulate  
characterization in combustion exhausts. An instrument for measuring  
particles of combustion exhausts includes a laser for producing a high  
intensity laser pulse. A sample cell receives a combustion exhaust input and  
the high intensity laser pulse. At least one detector detects a signal  
10           generated by particles in said received combustion exhaust input. The  
detected signal includes laser induced incandescence (LII). Signal  
conditioning electronics is coupled to the detector and particle data is  
displayed during transient operation of a combustion engine. Data related to  
mass concentration, number density, and particle size of particles in the  
received combustion exhaust input is measured and displayed.

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